




実験報告書様式(一般利用課題・成果公開利用)

(※本報告書は英語で記述してください。ただし、産業利用課題として採択されている方は日本語で記述していただいても結構です。)

 	承認日 Date of Approval 2017/10/6 承認者 Approver Takenao Shinohara 提出日 Date of Report 2017/10/5
課題番号 Project No.2017A0099 実験課題名 Crystallographic structure measurements of Japanese swords in Muromachi/Naboku-cho period by using the pulsed neutron imaging 実験責任者名 Yoshiaki Kiyanagi 所属 Nagoya University	装置責任者 Takenao Shionohara 装置名 RADEN/(BL 22) 実施日 23-28 June

試料、実験方法、利用の結果得られた主なデータ、考察、結論等を、記述して下さい。(適宜、図表添付のこと)
 Please report your samples, experimental method and results, discussion and conclusions. Please add figures and tables for better explanation.

1. 試料 Name of sample(s) and chemical formula, or compositions including physical form.
We performed neutron imaging experiments for Japanese swords. They are made with iron in Muromachi/Naboku-cho period and in a modern age as a reference. An example photo of the swords is shown below. 

2. 実験方法及び結果 (実験がうまくいかなかった場合、その理由を記述してください。)
Experimental method and results. If you failed to conduct experiment as planned, please describe reasons.
We measured 4 Japanese swords, We perform Bragg edge transmission experiments and CT measurements on four kinds of Japanese swords to observe the crystallographic characteristics. To know the change in a sword three positions of each sword were measured by the Bragg edge transmission method. The detector used was n-GEM. The setting of the sword is shown in Fig. 1. CT measurements were performed for center of each sword. The setting is shown in Fig. 2. An example of a CT imaging is shown in Fig. 3 although it is preliminary analysis. Hamon was observed near the edge of this



Fig. 1 Setting for Bragg edge measurements.

2. 実験方法及び結果(つづき) Experimental method and results (continued)

Sword. This may be due to martensite phase caused by quenching. However, its appearance seems to be different among the swords. It may imply different quenching manner depending on age. These data are still preliminary and we need more strict analysis on each sword.

About Bragg edge transmission measurement, we have started single edge data analysis. It will take long time to get crystallographic information. Fig. 1 Setting for Bragg edge measurements



Fig. 2 Setting for CT measurements.

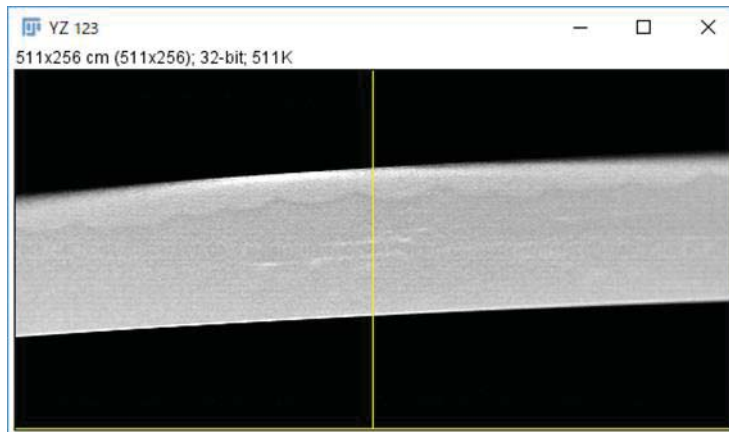


Fig. 3 An example of CT image of Japanese sword.